



Attorney Docket No.: 259/014

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the application of

Gu-Sung KIM

Examiner: Long Pham

Serial No.: 10/073,173

Group Art Unit: 2814

Filed: February 13, 2002

Confirmation No. 4677

For: WAFER LEVEL PACKAGE WITH AIR PADS  
AND MANUFACTURING METHOD THEREOF

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**AMENDMENT AND REQUEST FOR RECONSIDERATION**  
**UNDER 37 C.F.R. §1.116**

Commissioner for Patents  
United States Patent and Trademark Office  
Washington, D.C. 20231

Sir:

In response to the Final Office Action mailed March 3, 2003, applicants respectfully request favorable reconsideration of the rejection of pending claims 1-6 in view of the following comments. Undersigned applicants' representative notes with appreciation the Examiner's agreement to an in-person interview with the Examiner on June 26, 2003.

**A. Introduction**

Claims 1-6 are currently pending.

In the Final Office Action mailed March 3, 2003, claims 1-6 were rejected.

Claims 1 and 5 were rejected under 35 U.S.C. §102(b) as anticipated by Johnson et al., U.S. Patent No. 6,341,071 ("Johnson'071").

Claims 2, 3, 4 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Johnson'071.

**B. Asserted Rejection of Claims 1 and 5 under 35 U.S.C. §102(b)**

Claims 1 and 5 were finally rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 6,341,071 to Johnson et al. (hereinafter, "the Johnson et al. reference"). Applicants note with appreciation the Examiner's agreement during the in-person interview on June 26, 2003, that the Johnson et al. reference fails to teach the limitation of a conductive pad overlaying an air space that extends beyond the pad of claims 1 and 5, as set forth in the Interview Summary dated June 26, 2003. As pointed out during the interview, the Johnson et al. reference actually teaches that the conductive pad 44 overlays the substrate material and not the air space:

An annular void 43 of height  $\Delta H_1$  within the substrate 42 surrounds *substrate material underneath the BGA pad 44*. An annular void 56 of height  $\Delta H_2$  within the board 52 surrounds board material underneath the circuit card pad 54.

*The Johnson et al. reference*, col. 4, lines 9-12, (emphasis added).

An annular void 76 of height  $\Delta Y$  within the board 72 surrounds *board material underneath the circuit card pad 74*. ... The annular void 76 provides space so that *the substrate material underneath the circuit card pad 74 is less constrained*, thereby increasing its compliance and alleviating the thermally induced strain in the solder ball 68.

*The Johnson et al. reference*, col. 4, lines 36-38 and lines 42-46, (emphasis added).

An annular void 83 of height  $\Delta Z$  within the substrate 82 surrounds *substrate material underneath the BGA pad 84*.

*The Johnson et al. reference*, col. 4, lines 36-38 and lines 60-62, (emphasis added).

Based on the Examiner's agreement that the Johnson et al. reference fails to teach the limitation of a conductive pad overlaying an air space that extends beyond the pad of claims 1 and 5, applicants respectfully submit that the rejection of claims 1-6 under under 35 U.S.C. § 102(b) is traversed.

C. Asserted Rejection of Claims 2, 3, 4 and 6 under 35 U.S.C. §103(a)

Claims 2, 3, 4 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over the Johnson et al. reference as applied to claims 1 and 5 and further in view of the Examiner's remarks. Applicant respectfully traverses this rejection. Applicant submits that because claims 2-4 and 6 are dependent on claim 1, claims 2-4 and 6 are allowable as being based on an allowable base claim.

D. Conclusion

In view of the above remarks, applicants respectfully submits that claims 1-6 are in condition for allowance, and a notice to such effect is respectfully requested.

Finally, if the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing remarks, reconsideration of this application is respectfully requested, and an early and favorable action upon all the claims is hereby requested.

Respectfully submitted,

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Date: July 25, 2003



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